Effect of Social-Platform Educational Instructions on Self-Efficacy and Self-Esteem of Patients with Coronary Artery Diseases

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Abstract

Background: The main cause of mortality in the developed world is coronary artery disease. Low self-efficacy and self-esteem are associated with it. Self-efficacy is a critical, adjustable personal resource that influences rehabilitation adherence and disease outcomes including health-related quality of life in persons with cardiovascular disease. **Aim**: This study was aimed to determine the effect of social-platform educational instructions on self-efficacy and self-esteem of patients with coronary artery diseases. **Subjects and method: Design:** A quasi-experimental research design was utilized. **Setting:** The study was applied in the cardiology unit and outpatients' clinics at Port-Said University Hospital. **Subjects:** A Purposive sample of (80) adult patients diagnosed with coronary artery disease. Participants were equally and randomly allocated to an intervention and a control group, (40) patients for each one. **Tools for data collection:** Tool (1) a structured interviewing questionnaire, Tool (2) cardiac self-efficacy scale, Tool (3) cardiac exercise self-efficacy scale, Tool (4) Coopersmith Self-Esteem Inventory, and Tool (5) adult patients' satisfaction with social-platform educational instructions. **Results:** The study result portrays that (82.5%) of the study group and (72.5%) of the control group were of the same age from 30- ≤ 60 groups with a mean age (45.21 ± 7.02) (46.61 ± 10.43) respectively. The majority of the patients in the study group had satisfactory knowledge levels, and had high cardiac self-efficacy, self-esteem, and practice exercise self-efficacy post-social-platform educational instructions implementation. The mean score of self-efficacy in the intervention group significantly increased across the two measurement time points as well as self-esteem, while it remained significantly unchanged in the control group. **Conclusion:** Regarding knowledge, cardiac self-efficacy, cardiac exercise self-efficacy post, and after two months of social-platform educational instructions, there was a statistically significant difference between the study and control groups. Social-platform educational instructions were effective and significantly improved adult patients' knowledge, self-efficacy, and self-esteem. **Recommendations:** We recommend interventions to improve patient's compliance with treatment should be encouraged. Therefore, nurses can use this strategy to improve these patients' self-efficacy and self-esteem.

Keywords: Cardiac self-efficacy, Coronary artery disease, Self-esteem, Social-platform educational instructions.

Introduction

Coronary artery disease (CAD) is a pathological condition characterized by the accumulation of atherosclerotic plaque in the coronary arteries caused by myocardial ischemia decreasing blood supply to the heart muscle. Coronary Heart Disease (CHD) is a disease in which the prevalence increases every year and creates a high economic burden for Indonesia **(Knuuti, et al, 2020)**.

The most common risk factors for the development of coronary artery diseases include diabetes mellitus, hypertension, hyperlipidemia, smoking, and emotional stress. Efforts that must be made by patients after CAD include lifestyle changes, such as changes in dietary patterns, smoking habits, limiting activities, and controlling stress, and anxiety **(Barham et al., 2019).**

Several factors can be the causes of non-compliance for post-attack management in CAD patients. Non-compliance with post-acute management can be influenced by lack of health literacy, poor health beliefs, and behaviors, side effects of treatment, financial limitations, and depression and had a significant direct effect on adherence to self-care in CAD patients' self-efficacy (**Borzou et al., 2018).**

European Society of Cardiology (ESC) guidelines for the management of coronary syndromes were designed to achieve optimal disease stabilization or regression and included pharmacological management, developing healthy lifestyle behaviors, and percutaneous coronary interventions. A multidisciplinary team approach that provides personalized and flexible support to patients can lead to the achievement of optimum management outcomes **(Knuuti, et al., 2020)**.

Cardiac self-efficacy is defined as a cardiac-specific measure of a patient's confidence in his or her capability to accomplish activities that can be limited due to the symptoms and challenges imposed by their cardiovascular disease and their ability to successfully adhere to specific health behaviors such as compliance to exercise training regimes. Self-efficacy is considered a vital modifiable personal resource affecting rehabilitation adherence, the management of many chronic diseases, and disease outcomes such as health-related quality of life (HRQOL) among people with cardiovascular disease (CVD) **(Banik, et al., 2018)**.

Self-efficacy is the ability to exert a desirable effect and is defined as an individual's perception of the ability to successfully perform a given action. Individuals with low self-efficacy avoid any behavior or action that they feel is beyond their abilities. On the contrary, high levels of self-efficacy help change a threatening situation into a situation of confidence, resulting in better self-management outcomes, and improved life expectancy. High self-efficacy improvement is also effective in modifying (**Mansouriyeh et al., 2017).**

Current problems related to health education, especially in cardiac intensive units in one of the referral hospitals are the provision of health education without the results of a comprehensive study of the learning needs of patients with general material. Moreover, nurses also stated that there was a lack of time to provide health education to patients because of the high workload of nurses in the ICU and this was one of the obstacles to providing health education to the patients. These results may lead to the ineffective provision of information related to self-care after acute attacks on patients and families (**Nuraeni et al., 2019**).

Coronary artery disease causes high levels of physical, sexual, occupational, and social stress and disability and considerably increases the mortality rate. These stressors reduce self-esteem, cause fear and disappointment and undermine mental health, thereby negatively affecting self-efficacy. Self-esteem refers to the subjective self-evaluation of self-worth (**Holloway**, **2016**). Patients with CAD suffer from low self-esteem. Self-esteem is affected the social relationships, thinking, feelings, and functioning of patients (**Wantiyah et al., 2020**).

Education is a potentially effective strategy for empowering patients and promoting their self-esteem and self-efficacy. Patient education is a key component of nursing care and is considered one of the professional standards in nursing practice. In Iran, obstacles such as nursing shortage and lack of sufficient time prevent nurses from educating patients. There are several methods to educate a patient. Choosing the right method for educating the patient is important (**Hachambachari et al., 2017)**.

Electronic education is among the modern approaches to education. It integrates different equipment and technologies to deliver educational material. This equipment and technologies include but are not limited to, electronic media, elaborate networks such as the internet and extranet, compact discs, multimedia software, and computer simulation modeling. Social-platform education is an extension of electronic education, through which several media are combined to facilitate the interaction of learners and software, thereby

encouraging creativity and increasing the effectiveness of education (**Lawn et al., 2017).**

The main goal of social-platform education is to help learners achieve higher levels of knowledge and skills. One of the advantages of social-platform education is its easy applicability for people with low literacy skills. In studies on the use of social-platform education for patients with chronic diseases such as patients undergoing heart surgery and heart failure **(Abbasi et al., 2018**), and on preparing patients with prostate cancer for radiotherapy (**Dawdy et al., 2018**), patients with and lumbar disc surgery (**Zarei et al., 2018**)

Significance of the study

It is estimated that >7 80 000 persons experience CAD each year in the United States **(Liu, et al., 2017)**. Egypt has one of the highest mortality rates secondary to cardiovascular diseases (CVD) in the region and is rapidly rising **(Reda, et al., 2019)**, this may be due to the high prevalence rate of cardiovascular disease risk factors such as hypertension, dyslipidemia, and obesity are common among Egyptians **(Ibrahim, et al., 2013).** World Health Organization Statistics estimates that cardiovascular diseases are the leading cause of death in Egypt, accounting for 40% of total deaths **(WHO, 2020)**.

The Technological revolution has opened up new possibilities for expanding access to effective treatments for mental health conditions**.** There is emerging evidence that technology-delivered therapy is effective for health issues **(Podina et al., 2019).** Online therapy may be accepted easily because it may save money as well as the advantages of flexibility in location, time, and cost **(Song, et al., 2019)**. Also, technology-enabled education at home allows people with chronic diseases to combine pathology management with their everyday social life **(Di Tella, et al. 2019).**

Different results have been observed in terms of the effects of social-platform education use. In addition, in these studies, social-platform education has been used for patients with chronic disorders. Given that CAD is one of the most life-threatening acute disorders and there is a need for self-care in a patient who has suddenly been diagnosed with the disorder to prevent complications, to evaluate the effects of social-platform education on self-efficacy and self-esteem among patients with CAD.

Aim of the study

This study aimed to determine the effect of social-platform educational instructions on the self-efficacy and self-esteem of patients with coronary artery diseases through:

1. Assessing cardiac patients' needs for self-efficacy.
2. Assessing cardiac patients' self-esteem.
3. Developing and implementing social-platform educational instructions according to patients' needs.
4. Evaluating the effect of the social-platform educational instructions on cardiac patients' outcomes regarding their self-efficacy
5. Assessing the cardiac patients' satisfaction with social-platform educational instructions.

Research hypothesis:

Social-platform educational instructions application will have a positive effect on improving the knowledge, self-esteem, and cardiac self-efficacy scores of cardiac patients with coronary artery diseases.

Subjects and methods

Research design:

A quasi-experimental research design was utilized to achieve the aim of this study. A quasi-experimental design is an empirical study as it estimates the causal impact of an intervention on its target population (**Creswell, 2012)**.

Setting:

The study was applied in the cardiology unit and outpatients' clinics at Port-Said University Hospital. The cardiology unit consists of 4 rooms each room including 4 beds on the second floor of the hospital. Outpatient unit' clinics consist of one room on the first floor of the hospital. It includes only one bed, table, chairs, ECG, echogram, and emergency drugs. The study was applied in the previously

selected settings because of the high prevalence of adult patients in the selected setting, as well as the fact that it serves the most populous region of the country.

Subjects:

A Purposive sample of (80) adult patients diagnosed with coronary artery disease was equally and randomly allocated to an intervention and a control group, (40) patients for each one

Sample calculation:

The sample size was calculated with a mean self-esteem score of 100 ± 7, an effect size of 6, a confidence interval of 95%, and a power of 90%. The sample size calculation equation revealed that 40 patients were needed in each study group (**Avazeh et al., 2015**).

For randomization, 40 cards labeled 1 and 40 cards labeled 2 were placed in a box and a nurse in the study setting was asked to randomly draw a card from the box for each patient who was recruited to the study. Accordingly, the intended patient was allocated to the intervention group if the card was labeled 1 or to the control group if the card was labeled 2. The drawn cards were not placed in the box again.

Inclusion criteria included:

- Cardiac adult patients from both gender
- Their age of fewer than 60 years
- Already use social platforms such as Facebook and WhatsApp groups.
- Accessibility via phone call
- Access to a video CD player and the ability to use the player
- Willingness to participate in the study.

Exclusion criteria included:

- Patients are suffering from other chronic illnesses, mental disorders, and injuries.

Tools of data collection:

Five tools were used for data collection for the study as follows:

Tool (1) a structured interviewing questionnaire:

Tool I: A structured interview questionnaire was developed by the researchers after reviewing the related literature and research studies **(Bay, et al., 2018 & Kohle, et al., 2018 & Yu, et al., 2019)**. It included three parts:

Part (1): It included demographic data of the cardiac patient; it was composed of (6) items such as (age, gender, marital status, level of education, employment status, and residence).

Part (2): It included past medical history and compliance with medication; such as cardiac catheterization, open heart surgery, length of stay, dietary patterns, smoking, and exercise practices. It was composed of (10) items in the form of closed-ended questions and open-ended questions.

Part (3): Patients' knowledge questionnaire sheet: It was adapted from **(Murfin, 2010)**. It was used to assess the knowledge level of patients with CAD. It contains (20) closed-ended (meaning of the disease, risk factors, signs and symptoms, diagnostic tests, treatment, diet, exercise, smoking, stress management, and sexual relation).

Scoring system of patients' knowledge questionnaire sheet:

The score of 1 was for the correct answer and 0 for the incorrect answer. The total knowledge score was (20). The level of the patient's knowledge was considered unsatisfactory when less than 60%, while ≥ 60%, the patient level of knowledge was considered as satisfactory level.

Tool (2) cardiac self-efficacy scale:

It was adopted from **(Sullivan, et al., 1998)** and was used to assess self-efficacy. This scale contains 16 items on self-efficacy and confidence in symptom control, medication adherence, and adherence to general care-related activities. The items of the CSES are scored on a five-point scale ranging from 0 ("not at all confident") to 4 ("completely confident"). The total score of the scale can range from 0 to 64, with higher scores showing higher self-efficacy. In the study by Varela, the Content Validity Index (CVI) of the CSES was examined in terms of relevance, clarity, simplicity, and fluency of its sentences. Each section's content, clarity, and simplicity were 93.40, 89.80, and 90.80%, respectively. In

total, the CVI of the questionnaire was 91.33%. Moreover, the reliability of the questionnaire was determined using the internal consistency method. The Cronbach's alpha coefficient was 0.977 (**Varaei et al., 2017).**

Scoring system of cardiac self-efficacy scale:

The researchers asked the patients to write their responses regarding 16 statements on a 5-points scale (0 = not at all confident, 1 = somewhat confident; 2 = moderately confident, 3 = very confident, and 4 = completely confident). The items were first scored on a 5-point Likert scale ranging from 0 to 5, followed by summation. Higher scores indicated a greater level of cardiac self-efficacy in maintaining function.

Tool (3) cardiac exercise self-efficacy scale

This scale was adopted from **(Hickey, Owen & froman, 1992)**. It contains 16 items. The scale is a self-report scale that was developed specifically to measure exercise self-efficacy in cardiac patients. It assesses patients' level of confidence in performing physical exercise-related items such as warming before exercise, exercising without chest pain, measuring their heart rate before and after exercise, enduring strenuous, moderate, and light exercise, cooling after exercise and exercising at least 20 minutes 3 times weekly. Translation and re-translation from English to Arabic were done for this tool to assure accuracy for content validity.

Scoring system of Cardiac Exercise Self-Efficacy Scale (ESES):

Patients were instructed to indicate their response on the 5-point rating scale (1 = no confident, 2 = very little confident; 3 = some confident, 4 = confident, and 5 = very confident) with "1" represented the lowest and "5" the highest efficacy rating. It was classified as:

- High cardiac exercise self-efficacy if the score ≥ 70 % of the maximum score.
- Low cardiac exercise self-efficacy if the score is < 70% of the maximum score.

Tool (4): Coopersmith Self-Esteem Inventory (CSEI):

This scale was adopted from (**Madani et al., 2002**). This inventory is used to measure adults' self-esteem. It consists of 35 items that are scored on a four-point scale ranging from 1 ("Completely disagree") to 4 ("Completely agree"). Therefore, its total score ranges from 35 to 140, with higher scores illustrating higher self-esteem. In the study, the reliability of the CSEI was confirmed using the correlation coefficient (r = 93%). The Cronbach's alpha coefficient obtained by the researcher was 0.97. The study intervention was a multimedia educational program developed based on the existing literature and approved by five cardiologists in the study setting (**Hinkle et al., 2014**).

Tool (5) adult patients' satisfaction with social-platform educational instructions

It is used to assess patients' satisfaction with social-platform educational instructions. It included three statements regarding whether the contents of the social-platform educational instructions were enough, satisfaction with the social platform educational instructions, did social-platform educational instructions improve patients' knowledge, cardiac self-efficacy, and self-esteem.

Social-platform educational instructions contents:

- Social-platform educational instructions contents were developed for patients with coronary artery disease (CAD) to provide them with information related to CAD, measures to overcome complications, and measures to improve patients' self-efficacy.
- The social-platform educational instructions included theoretical knowledge about normal cardiac function, disease process (causes, risk factors, signs and symptoms, and diagnostic studies of CAD). CAD treatment, defining cardiac catheterization, benefits of cardiac catheterization and CAD complications, and the non-pharmacological therapy of CAD including dietary regimen, weight control, lipid management, and smoking cessation.

- Also, the social-platform educational instructions contents included the practical part about practicing physical exercises for CAD patients, precautions during practicing physical exercises, and stages of practicing physical exercises. It was measured by a cardiac exercise self-efficacy scale.

Validity and reliability of the tool:

- The content validity of the tool was tested by a board of five expert professors, three professors in the medical surgical nursing field, and two professors in the cardiology field. Modifications were made according to the panel judgment to ensure clarity and content appropriateness. The Reliability of the first tool was assessed through Cronbach's alpha test α= (patients' knowledge level was 0.965), cardiac self-efficacy scale was 0. 0.977, cardiac exercise self-efficacy was 0.925, and CSEI was 0.97.

The procedure of data collection:

Preparatory phase:

It included reviewing current and past available literature and theoretical knowledge of various aspects of the study using the booklet, articles, internet, periodicals, and magazines to develop the data collection tools.

Administrative design:

Administrative permission was obtained through an issued letter from the Faculty of Nursing to the directors of the previously selected department to achieve this study and obtain permission for data collection.

Ethical considerations:

Before beginning the study, the researchers met with the directors of the previously selected settings to explain the aim of the study and gain their cooperation. First, the objectives of the study were explained to the adult cardiac patients and verbal consent was obtained from each participant. They were informed that participation in the study was voluntary, and they were free to withdraw from the study at any time, without giving any reason. The participants were told that their information would be kept confidential and used for research purposes only.

Pilot Study:

A pilot study was conducted on 10% of the patients (8 adult cardiac patients) to test the clarity and testing of the feasibility and applicability of the research process. Adult cardiac patients included in the pilot were excluded from the study.

Fieldwork:

- The researchers visited the previously selected settings two days/ a week from 9 am to 1 pm.
- They met the patients and explain the aim of the study after introducing themselves to the participants. Data were collected within six months, from the beginning of July to the end of December 2021. Approximately, 50-60 minutes were taken to complete the interview tools.

The collection of data was done through three phases:

I- Assessment phase:

In this phase, the researchers collected data from both groups (study & control). It was begun with the patient structured interview questionnaire which includes (demographic characteristics, past medical history, patients' compliance with (medication, dietary patterns, smoking, and exercise practices), and knowledge level of patients with CAD (definition of the disease, risk factors, signs and symptoms, diagnostic tests, treatment, diet, exercise, smoking, and sexual relation). The time needed for completing this questionnaire was about (20-30 minutes) for each patient. After that, the cardiac self-efficacy scale and cardiac exercise self-efficacy scale took about (10-15minutes).

II- Planning phase:

- During this phase, the researchers explained to patients the benefits of the Social-platform educational instructions as the social-platform educational instructions contents were available to the patients through a WhatsApp to application and feedback groups.

- Social-platform educational instructions were designed based on an analysis of the actual educational patients' knowledge level in the pretest. The content of the instructional booklet was written in simple Arabic language and consistent with the related literature based on their level of understanding.
- The researchers obtained patients' telephone numbers from each patient and assessed the availability of internet access to communicate with the researchers via WhatsApp group.
- A WhatsApp group was developed by the researchers to communicate with patients daily and to present the contents of social-platform educational instructions (Booklet, videos, illustrative pictures)

III- Implementation phase:

The content of the social-platform educational instructions included CAD definition, its etiology, cardiac dietary regimen, appropriate use of cardiac medications, stress management strategies, and physical activity. Education was provided using a video CD containing pictures and sound clips. At the time of their hospital discharge, eligible participants were recruited to the study, allocated to the study groups, and asked to respond to the data collection tools. Then, each participant in the intervention group was provided with a copy of the video through the WhatsApp group application of the social-platform educational instructions. They were provided with a reminder checklist, which included items on adherence to the dietary regimen, physical activity, cardiac medications, smoking cessation, and stress management, and were asked to assess their adherence by marking the items on the checklist every week for eight successive weeks. In addition, telephone contacts were made weekly with them to remind them to use the social-platform educational instructions. Participants in the control group exclusively received routine care services by receiving an educational pamphlet at the time of discharge from the hospital. All participants filled out the study instruments before, immediately, and two months after the onset of the study intervention.

- Following the creation of the WhatsApp group, the researchers delivered text and voice messages outlining the objectives of the social-platform instructional materials.
- The researchers decided to implement a WhatsApp meeting chat session and upload the contents of each section of the social media educational instructions on one day (Monday) each week. Patients were also advised to attend this meeting on time to allow for open discussion between all the group members.
- Additionally, the researchers sent daily messages outlining crucial advice and techniques for treating coronary artery disease to motivate patients to maintain healthy lives.
- The patients were encouraged to communicate with one another by exchanging daily, brief health messages on their experiences with coronary artery disease, its symptoms, and problems, as well as how each patient may manage these experiences.
- To help patients adopt a healthy lifestyle, the researchers also delivered daily communications with important principles and practices for managing coronary artery disease.

IV- (Evaluation phase):

Evaluation for both groups was conducted by interviewing patients at the outpatients' clinic post immediate & after two months by using the same tools to determine the effect of social-platform educational instructions on self-efficacy and self-esteem of patients with coronary artery diseases.

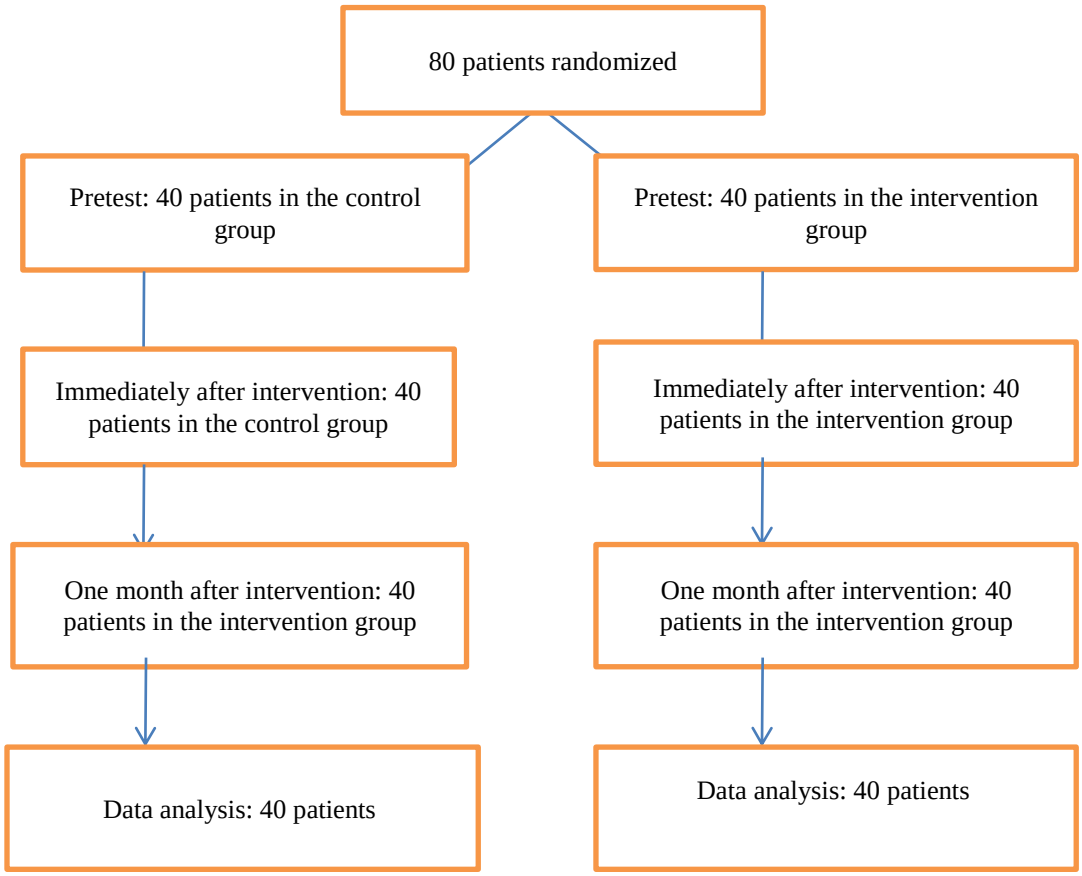


Figure (1): The flow diagram of this study can be seen in

Statistical design:

Data collection obtained was organized, categorized, tabulated, and analyzed. Data were presented in tables, and figures using SPSS for Windows, version 18. Data were presented using descriptive statistics in the form of frequencies and percentages for quantitative variables and mean and SDs for qualitative variables. Differences between the two means tests (t-test) were used. Chi-square (x2) test of significance was used. Cochrane Q, the test was used, and statistical significance was considered at P-value <0.05.

Results:

Table (I): portrays that (82.5%) of the study group and (72.5%) of the control group were of the same age from 30- ≤ 60 groups with a mean age (45.21 ± 7.02) (46.61 ± 10.43) respectively, (75%) were males in the study group compared to (77.5%) in the control group. While (100% and 95%) respectively of the study and control group patients were married. As regards the level of education, (42.5%&35%) of the study and control groups respectively had high school education.

Concerning the employment status, (62.5%) of the study and control (65%) were working. As regards, residence, (80%) of the study and (82.5%) of the control group were living in urban areas. There were no statistically significant differences between the study and control group patients regarding all aspects of demographic characteristics.

Table (2) illustrates that (27.0%) of the study group and (38%) of the control group had a previous history of cardiac catheterization. While the minority of the study and control groups

patients (2% & 4%) respectively had a history of open-heart surgery. Among the studied patients (85% and 95% respectively) stay less than five days at hospitals.

Concerning dietary patterns (52.5% and 55%) the study group and control group respectively had weight gain. While, (37.5% & 40% respectively) of study and control group subjects were smokers for more than 3 years. As regards exercise practicing (10%) in the study group patients compared to 7.5% in the control group practice exercise. As regards the effect of health conditions on working (25% & 20% respectively) of study and control group patients changed their job due to health condition**s.** There were no statistically significant differences among study and control group patients as regards all items of past medical history and lifestyle.

Table (3): shows that there was no statistically significant difference between control and study group subjects pre- social-platform educational instructions implementation regarding patient`s total knowledge. While the highly statistically significant difference was detected between both groups immediately after post and post two months of social-platform educational instructions implementation in total knowledge with ($p \leq 0.001$).

Figure (1): Reveals that there was no statistically significant improvement in the control group regarding pre-total knowledge level ($p \leq 0.126$). While there was a highly statistically significant improvement among patients in the study group regarding the total knowledge level pre- immediately post and post two months of social-platform educational instructions implementation ($p \leq 0.001$**).

Table (4): shows that there were highly statistically significant differences between the studied patients in the study & control groups during pre- immediately post and post and post two months of social-platform educational instructions implementation regarding SECS.

Table (5): shows that most of the study and control group subjects (92% & 97% respectively) had low exercise self-efficacy pre- social-platform educational instructions implementation. The majority of the study group (83% & 81) and the minority of the control group (3%, 5%) respectively had high exercise self-efficacy immediately post and post and post two months of social-platform educational instructions implementation. There were highly statistically significant differences between both groups immediately post and post and post one month of social-platform educational instructions implementation regarding CESE, as well within the study group between pre, immediately post and post and post two months of social-platform educational instructions implementation. While there were no statistically significant differences between the two groups pre- social-platform educational instructions implementation.

Table (6): shows that there were highly statistically significant differences between the studied patients in the study & control groups and the mean score of self-esteem in the study group was significantly higher than the control group during pre- immediately post and post and post two months of social-platform educational instructions implementation regarding CSEI.

Table (7): Presents that all of the studied patients (100%) reported that the contents were enough and were satisfied with the social-platform educational instructions. Concerning its effect on knowledge, all of them (100%) reported that it improved their knowledge, cardiac self-efficacy, and self-esteem. Finally, all of them reported that social-platform educational instructions had many advantages such as active participation, participants can get a chance for live chat, participants can reach it at any place, they offer calendar scheduling and invites, and ease of users to stay in touch with teaching program providers.

Table (1): Percentage distribution of the studied patients regarding their demographic characteristics in the study and control groups (N=80)

Demographic characteristics	Study (n=40)		Control (n=40)		Chi- square T test	p- value
	No	%	No	%		
Age (in years) 21-<30- 30- ≤ 60	 7 33	 17.5 82.5	 11 29	 27.5 72.5	0.274	0.773
(Mean ± SD)	45.21 ± 7.02		46.61 ± 10.43			
Gender Male Female	30 10	75 25	31 9	77.5 22.5	0.023	1.000
Marital status Single Married	0 40	0.0 100	2 38	5 95	1.743	0.623
Educational level Not read or write Read and Write High school University education	10 8 17 5	25 20 42.5 12.5	14 6 14 6	35 15 35 15	1.203	0.759
Employment status Worked Housewife Not work	25 11 4	62.5 27.5 10	26 9 5	65 22.5 12.5	1.558	0.663
Residence Rural Urban	8 32	20 80	7 33	17.5 82.5	4.254	0.039

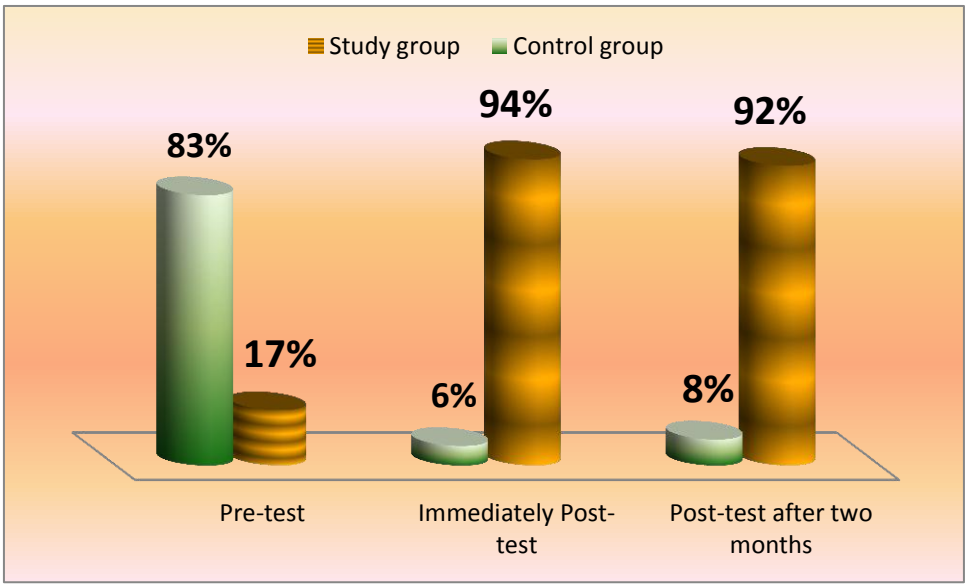
Table (2): Percentage distribution of the studied patients regarding their medical history and lifestyle in the study and control groups (N=80)

Medical history and lifestyle	Study (n=40)		Control (n=40)		Chi- square/ T test	p- value
	No	%	No	%		
Cardiac catheterization	11	27	15	38	1.632	0.207
Open heart surgery	1	2	2	4	0.354	0.557
Length of stay Less than five days More than five days	34 6	85 15	38 2	95 5	2.463	0.552
Dietary patterns						
Weight gain	21	52.5	22	55	0.171	0.683
Weight loss	19	47.5	18	45	1.073	0.313
Smoking						
Yes No Ex-smoker	15 13 12	37.5 32.5 30	16 14 10	40 35 25	1.290	0.530
Duration of smoking > 3 years	15	100.0	16	100.0	0	1
Exercise practicing Yes No	4 36	10 90	3 37	7.5 92.5	0.012	0.913
Effect of health condition on working Need rest periods while working Change job	30 10	75 25	32 8	80 20	0.454	0.489

Table (3): Comparison of mean score of patient's knowledge scores among study and control group pre, post immediately and post two months social-platform educational instructions implementation (N=80)

Items	Study group (n=40)	Control group (n=40)	T-stet	p-value
	Mean ± SD	Mean ± SD		
Total Knowledge	21.78 ± 8.87	22.83 ± 10.53	3.075	0.125
- Pre-test	79.03 ± 9.14	23.08 ± 11.33	26.883	<0.001**
- Immediately post-test - Post two months	73.63 ± 11.45	21.97 ± 10.45	22.642	<0.001**

*** Significant p ≤ 0.05 ** Highly Significant p ≤ 0.001 Not significant p > 0.05**



*** Significant (S) p ≤ 0.05 ** Highly Significant (HS) p ≤ 0.001**

Figure (1): Comparison between study & control groups regarding their total knowledge level pre, immediately post and post two months of social-platform educational instructions implementation (N=80)

Table (4): Comparison of mean scores of cardiac Self-Efficacy (SECS) between the studied patients in the study & control groups during pre- immediately post and post and post two months of social-platform educational instructions implementation (N=80)

Items	Study group	Control group	F ratio	P-value
	Mean ± SD	Mean ± SD		
SECS				
- Pre-test	1.63 ± 2.37	1.62 ± 2.03	63.723	< 0.001**
- Immediately post-test	9.34 ± 5.32	2.57 ± 2.27		
- Post two months	7.89 ± 3.97	2.53 ± 1.79		

**** Highly Significant (HS) p ≤ 0.001**

Table (5): Comparison between the studied patients in the study & control groups regarding Cardiac Exercise Self-Efficacy (CESE) scores during pre- immediately post and post and post two months of social-platform educational instructions implementation(N=80)

Items	Group				Chi-square	P-value
	Study Group		Control Group			
	No	%	No	%		
CESE (pre-test)	37	92	39	97	1.368	0.24
Low exercise self-efficiency						
High exercise self-efficiency	3	8	1	3		
CESE (immediately post-test)	7	17	39	97	60.05	<0.001
Low exercise self-efficiency						
High exercise self-efficiency	33	83	1	3		
CESE (post-two months)	8	19	38	95	65.57	<0.001
Low exercise self-efficiency						
High exercise self-efficiency	32	81	2	5		
Cochrane Q	73		0			
p-value	<0.001		1			

Table (6): Comparison of mean scores of cardiac Self- esteem between the studied patients in the study & control groups during pre- immediately post and post and post two months of social-platform educational instructions implementation (N=80)

Items	Study group	Control group	F ratio	p-value
	Mean ± SD	Mean ± SD		
CSEI			58.723	< 0.001**
- Pre-test	93.03 (7.13)	92.9 (6.92)		
- Immediately post-test	100.8 (4.83)	93.45 (6.82)		
- Post two months	104.79 (3.73)	93.53 (6.83)		

**** Highly Significant (HS)** **$p \leq 0.001$**

Table (7): Percentage distribution of the studied patients regarding their feedback regarding social-platform educational instructions implementation (N=40).

The social media-based teaching program	N0	%
Is the content enough?		
-Yes	40	100.0
-No	0	0.0
Satisfaction with the social-platform educational instructions		
-Yes	40	100.0
-No	0	0.0
Did social-platform educational instructions improve knowledge		
-Yes	40	100.0
-No	0	0.0
Did social-platform educational instructions improves cardiac self-efficacy and self-esteem		
-Yes	40	100.0
-No	0	0.0
Advantages of social-platform educational instructions:		
- Active participation	40	100.0
-Participants can get a chance for live chat.	40	100.0
-Participants can reach it at any place.	40	100.0
-They offer calendar scheduling and invites	40	100.0
-Ease of users to stay in touch with teaching program providers	40	100.0

Discussion

Self-efficacy affects the compliance of CAD patients in self-care, and one of the factors that influence self-efficacy is health information or knowledge. Health information is important for shaping health behavior and helps in determining actions in health management and improves self-esteem (**Zarei et al., 2018).** Knowledge and awareness are key factors in self-efficacy; therefore, educational interventions can be used to promote patients' self-efficacy in self-care and improve health-related outcomes. Hence**,** the study aimed to determine the effect of social-platform educational instructions on the self-efficacy and self-esteem of patients with coronary artery diseases.

According to the results of the current study, most study group participants were between the ages of 30 and 60, compared to less than three-quarters of control group participants. This result does not differs from **Cheng, et al., (2019**) who analyze the psychometric features of the Hong Kong Chinese version of the cardiac exercise self-efficacy instrument, which discovered that a third of the study sample was between the ages of 40 and 49. Additionally, this result is consistent with a recent study by **Yu et al. (2019),** entitled "Effect of health education based on behavioral change theories on self-efficacy and self-management behaviors in patients with chronic heart failure," which found that the majority of the study sample was between the ages of 31 and 60. This can be taken to mean that people of diverse ages can get coronary artery disease.

According to the gender findings of the current investigation, men made up the majority of both the study and control group participants. This finding is in line with that of **Bay, et al., (2018**), who identified factors associated with low exercise self-efficacy in adults with congenital heart disease and potential strategies for engaging in physical activity. They also discovered that more than half of the subjects in the study and the control group were male. Additionally, this outcome is consistent with **Peng, et al., (2018**) who studied "Home-based Telehealth exercise training program in Chinese patients with heart failure: A randomized controlled trial," in which they noted that the majority of the patients were male. The majority of the study sample was female, according to **Cheng et al. (2019**), hence this result is contradictory.

All of the study subjects in the study group and nearly all of the research subjects in the control group were married, according to the study's findings. This result is consistent with **Kohle, et al., (2018**) who studied "assessment of patients' levels of empowerment and general self-efficacy six to 12 months was following a cardiac incident", which noted that the majority of their study sample was married. This result is also consistent with **Salari, et al. (2016)** findings regarding the predictors of cardiac self-efficacy following coronary artery angioplasty, which revealed that the majority of their study group was married.

Concerning educational level, this study result revealed that more than one-third of the study and control groups' patients had high school education. This result is not matched with **Barham et al., (2019)**, who assessed patterns of cardiac self-efficacy and quality of life among coronary heart disease patients and mentioned that less than half of their study subjects had primary education. As well, this result is incongruent with **Salmoirago-Blotcher, et al., (2017)** who mentioned in their study about ‘‘Tai Chi is a promising exercise option for patients with coronary heart disease declining cardiac rehabilitation’’ that half of their study subjects had a college education.

Concerning the employment status, this study result revealed that more than two-thirds of the study and control were worked. This result is congruent with **Tawalbeh, (2018)**, who examined the effect of a cardiac educational program on knowledge and self-care behaviors among patients with heart failure and indicated that about two-thirds of the studied patients were working. While, these results are in disagreement with **Baradaranfard, et al., (2018)**, who determined the relationship between quality of life and cardiac self-efficacy in patients with heart failure and denoted that the minority of the sample were employees.

In the current study, the results showed that there were no statistically significant differences between study and control group patients regarding all aspects of demographic characteristics; this result indicates that both study and control groups were compatible. This result is

in accordance with **Peng, et al., (2018)**, who mentioned that there were no significant differences between the experimental and control groups concerning patients' demographic variables. While, these results are in disagreement with **Maddison, et al., (2018)** in their study titled ‘‘Effects and costs of real-time cardiac telerehabilitation: randomized controlled trial”, they found that a minority of the studied sample had diabetes mellitus.

The results of the current study revealed that there was a highly statistically significant improvement in study group patients as compared to the result of control group post- social-platform educational instructions implementation regarding total knowledge scores. From the researcher's point of view, this might be due to the effectiveness of social-platform educational instructions implementation and the motivation of cardiac patients to be familiar with their disease. This result is in line with **Tawalbeh (2018)**, who studied" The Effect of Cardiac Education on Knowledge and Self-Care Behaviors among Patients with Heart Failure" and found that patients’ knowledge improved significantly at 1 and 3 months after the program application.

Regarding cardiac self-efficacy, the result of the current study cleared that there were highly statistically significant differences between the studied patients in the study & control groups during pre- immediately post and post and post one month of social-platform educational instructions implementation regarding SECS. From the researcher's point of view, this indicated the importance of introducing social platform educational instructions for patients to improve their self-efficacy which may be due to the growing acceptance of the disease and coping with it over time. Also, this may be related to the effect of social-platform educational instructions in improving cardiac self-efficacy of coronary artery disease patients.

In line with the current findings, a study conducted by **Chan et al., (2019**) reported that multimedia education during cardiac rehabilitation significantly improved cardiac patients' knowledge and self-efficacy. Another study was done by **Baljani et al., (2019**) about " Effects of a nursing intervention on improving self-efficacy and reducing cardiovascular risk factors in patients with cardiovascular diseases " also reported the effectiveness of education in significantly improving self-efficacy for medication adherence, physical exercise, weight loss, smoking cessation, and healthy eating.

This result is consistent with **Tavakolizadeh et al., (2017)**, who studied "Academic self-efficacy: predictive role of attachment styles and metacognitive skills in Iran" and reported that there were statistically significant relations between control and study group subjects regarding SECS post-program implementation.

While, this finding is in the same line as **Borzou, et al., (2018),** who stated in their study about ‘‘effects of the first phase of cardiac rehabilitation training on self-efficacy among patients undergoing coronary artery bypass graft surgery” that the mean score of the self-efficacy was statistically significantly different between the 2 groups before intervention.

The findings of **Nuraeni et al., (2019**), who investigated the "effect of a workbook in health education on self-efficacy and quality of life of patients with coronary heart disease," are also in line with this one. They reported that a significant difference had occurred in the patients' self-efficacy two months after measurement. Furthermore, this study's findings are consistent with those of **Boroumand & Moeini, (2018)**, who found that there were significant differences in self-efficacy six weeks and six months after the intervention and mentioned that the mean cardiac self-efficacy scores of the intervention group were significantly higher than the control group 3 and 4 months after the interventions in their study, "The effect of a text message and telephone follow-up program on cardiac self-efficacy of patients with coronary artery disease: A randomized controlled trial."

As well, this study result goes in line with **Yu, et al., (2019)**, who stated that the self-efficacy level of patients in the observation group who received health education was significantly higher than that in the control group.

Concerning cardiac exercise self-efficacy**,** the present study indicated that the majority of the study group and the minority of the control group respectively had high exercise self-efficacy immediately post and post and post two months of social-platform educational instructions

implementation. This may be due to the cardiac patient being motivated by the social-platform educational instructions which result in improving CESE. This result is inconsistent with **Paryad, et al., (2017),** who studied self-efficacy in patients with coronary artery disease and its predictors and found that only one-fourth of the study sample had desirable exercise self-efficacy.

Also, the results are supported by **Wang et al., (2018)** who studied "Multimedia exercise training program improves distance walked, heart rate recovery, and self-efficacy in cardiac surgery patients" and found that exercise training program improves distance walked among cardiac surgery patients.

The present study indicated that there were highly statistically significant differences between both groups immediately post and post and post one month of social-platform educational instructions implementation regarding CESE. This result is congruent with **Borzou, et al., (2018),** who studied " Effects of The First Phase of Cardiac Rehabilitation Training on Self-Efficacy Among Patients Undergoing Coronary Artery Bypass Graft Surgery " and stated that the exercise of self-efficacy scores was significantly different between intervention and control groups at the time of discharge and 1 month after program implementation. While, this result disagrees with **Claes et al, (2020),** in their very recent study titled ‘‘feasibility, acceptability, and clinical effectiveness of a technology-enabled cardiac rehabilitation platform physical activity toward health): randomized controlled trial’’, they signified that there was a documented decrease in exercise self-efficacy after the intervention.

Regarding self-esteem, the present study indicated that there were highly statistically significant differences between the studied patients in the study & control groups and the mean score of self-esteem in the study group was significantly higher than the control group during pre- immediately post and post and post one month of social-platform educational instructions implementation regarding CSEI. From the researchers' point of view, it reflected the significant effects of social-platform educational instructions on self-esteem and denotes its effectiveness in promoting behavior modification and improving patient outcomes. Several earlier studies have reported the positive effects of social-platform educational instructions

This finding is in line with that of **Zarei et al., (2016**), who studied " The impact of multimedia education on knowledge and self-esteem and discovered that multimedia education improved knowledge and self-esteem among patients. Similarly, **Mayer, (2018)** reported the same result.

This finding is supported by **Feizalahzadeh et al., (2019**) who assess the " Effectiveness of multimedia based on education and traditional methods on life quality and self-esteem of hemodialysis patients" and found that multimedia-based education has significant effects on improving patients' life quality and self-esteem.

Also, the results of the current study are in the same line as **Wu et al., (2018**) who conducted a study about the " Effectiveness of an accessibility-enhanced multimedia informational educational program in reducing anxiety and increasing self-esteem and satisfaction of patients undergoing cardiac catheterization " and reported that

Concerning satisfaction of the studied patients with social-platform educational instructions, they reported that the contents were enough and improved their knowledge, cardiac self-efficacy, and self-esteem. From the researchers' point of view, it indicated the good impact of social-platform educational instructions and also, reflects the benefit of administering the social-platform educational instructions, which met the patients' needs and provide them with sufficient knowledge to cope with this disease and reflected the success of the study aim.

Conclusion

Based on the current study results, it was concluded that the majority of study group subjects had a satisfactory level of knowledge, high cardiac self-efficacy, high cardiac exercise self-efficacy, and high self-esteem immediately post, and after two months of social-platform educational instructions, there was a statistically significant difference between the study and control groups. Social-platform educational instructions were effective and significantly improved adult patients' knowledge, self-efficacy, and self-esteem.

Recommendations:

Based on the findings of the current study, the following recommendations are proposed:

- Interventions to improve patient's compliance with treatment should be encouraged. Therefore, nurses can use this strategy to improve these patients' self-efficacy and self-esteem.
- Providing educational programs for cardiac patients can help effectively in the promotion of cardiac patients' self-efficacy and self-esteem.
- Improving cardiac patients' self-efficacy should be the main objective for nurses during their care of them.

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